

### III. NOTES UPON SOME NORTH AMERICAN SPECIES AND VARIETIES OF THE GENUS BRENTHIS.

BY W. J. HOLLAND.

(One figure in text)

Being engaged in the study of the butterflies of North America preparatory to the issue of a new and revised edition of "The Butterfly Book," I am led after going over the species of the genus *Brenthis* to publish the following notes as preliminary to figuring some of the forms herein described.

#### 1. *B. myrina* (Cram.)

*Papilio myrina* CRAMER, *Papillons*, Exot., I, 1779, p. 141, Pl. 189, figs. B, C; HOLLAND, "Butterfly Book," 1898, Pl. XV, fig. 1 ♂; fig. 2, ♀, *underside*; Do. "Butterfly Guide," 1915, Pl. XVII, fig. 1, ♂; fig. 2, ♀, *underside*.

The locality given by Cramer in his original description is New York: "Men heeftze in Noord-Amerika by Nieuwjork gevangen." I possess a series of specimens in the collections of W. H. Edwards and Theodore L. Mead taken by these gentlemen at Hunters, N. Y.; others taken by myself at Saratoga, and various localities in New England, and many from Pennsylvania. All of these agree with the somewhat crude figure given by Cramer and the specimens from New York may be accepted as topotypical. The male figure in "The Butterfly Book" is a specimen from Hunters, New York, from the Edwards Collection; the female, which shows the underside, is a specimen from the same locality selected from the Mead Collection. The male figured in "The Butterfly Guide" is a specimen bred by W. H. Edwards at Coalburgh, W. Va.; the female is the same specimen shown in "The Butterfly Book," reversed upon the pin to accommodate the specimen to the requirements of the plate. In "The Butterfly Guide" the figures are reduced about one-fourth below natural size. In all of these specimens the discal and basal markings of the wings on the upper side are not as heavy as in Cramer's original drawing and more nearly represent the "general run" of specimens of this species in New England and the Middle States. Occasionally specimens, marked as heavily as shown on Cramer's plate, are found. I have a couple of such specimens from Hunters, N. Y., and from the

summit of the Allegheny Mountains near Cresson, Pa. The late Dr. Henry Skinner in the *Trans. Am. Ent. Soc.*, Vol. XIV, 1887, p. v, calls attention to a pair of abnormal specimens, in which the discal and basal spots are widely black, apparently much more so than in Cramer's figure.

a. *B. myrina jenningsæ*, ♂, ab. nov.

The tendency to the enlargement of the transverse markings of the wings, which is found in all of the species of the group to which the insect belongs, is strikingly shown in an aberrational form taken by Mrs. O. E. Jennings at Jellicoe, on Thunder Bay, Ontario. The specimen is in the Carnegie Museum, Acc. No. 5921. To this aberration I give the name *jenningsæ*. A brief description follows:

♂. *Upper side*: fore wing, the two spots nearest the base of the wing in the cell are enlarged and fused, forming a large quadrate spot; both of the spots in the cell beyond these are greatly enlarged; the triangular spot near the base between veins 1 and 2 is greatly enlarged, and developed into a black triangle pointing outwardly; the discal band of dark spots are greatly enlarged, forming an irregular band from the costa to the inner margin; the marginal and sub-marginal series of spots are also enlarged. On the hind wing all of the spots and bands are greatly enlarged and black. *Under side*: the same increase in the size of all the markings which is seen on the upper side of the wings is repeated on the under side. The general ground-color of the wings is not as bright rufous as is ordinarily the case, but tends to buff.

b. *B. myrina terræ-novæ* subsp. nov. In the collection of Theodore L. Mead is a series of male specimens taken by him in Newfoundland. These are all characterized by the suffusion of the inner half of both fore and hind wings by fuscous, so that the markings on the wings are obscured. To this form I give the subspecific name *terræ-novæ*. It is the insular form of *B. myrina* which is commonly found in Newfoundland.

c. *B. myrina nebraskensis*, var. nov. For many years I have had in my possession four specimens, unfortunately all of them males, collected for me in Dodge County, Nebraska, by Mr. E. A. Dodge. They are remarkable because of their large size, exceeding in expanse of wing the ordinary run of topotypical specimens by fully 25 pr. ct. The usual expanse of males is as shown in "The Butterfly Book, Pl.

XV, fig. 1," about one and one-half inches. These specimens are all about two inches in expanse of wing, one of them exceeding two inches in expanse. For this large variety I propose the name *nebraskensis*.

d. *B. myrina tollandensis* Barnes & Benjamin.

Of this western form I find that I have two specimens in the Mead Collection, labelled as from "The Middle Park, Colorado." Mead listed them as *Argynnis myrina* in his "Report upon the Collections of Diurnal Lepidoptera, &c., U. S. Geog. & Geol. Survey West of the rooth Meridian," Vol. V, Cap. VIII, 1875, p. 756. *B. myrina tollandensis*, B. & Benj., as pointed out by the authors, is prevalently lighter in color than toptotypical specimens with a tendency to a reduction in size of the dark markings. We have a specimen from Montana which shows the same characteristics, but it is larger than the specimens from Colorado, which do not exceed in size the average run of eastern specimens.

2. *B. euphrosyne* (Linnæus) var. *andersoni* Dyar.

Barnes & Benjamin in their recent *Check-list of the Butterflies of Boreal America* treat *B. andersoni* Dyar as a form of *B. euphrosyne* (Linnæus). With a long series of *B. euphrosyne* and of the smaller northern variety, *B. fingsal* Herbst before me, most of the specimens obtained by me from the late Dr. Otto Staudinger, and therefore probably correctly determined, I am inclined to agree with Barnes and Benjamin in their view. The description given by Dyar agrees well with the underside of the specimens of *B. euphrosyne*, which I have carefully examined, but on the upper side the description of Dyar does not exactly agree with what is known of *B. euphrosyne* and its varieties from Europe. The latter are all quite dark on the inner third of the wings, especially the hind wing. The form described by Dyar is brighter, and the markings more distinct.

3. *B. laurenti* Skinner.

Barnes and McDunnough sink this as a synonym of *B. andersoni* Dyar. I have recently examined the type of *B. laurenti* Skinner and am not at all prepared to regard it as being the same as *B. andersoni*, but reserve expressing a final opinion until I can more closely compare the types.

4. *B. kriemhild* Strecker. We have in our possession in the collection of the late George Ehrman a pair labeled "*B. kriemhild* Strecker,"

which according to the labels were received from Strecker. They are marked "cotypes," "Coll. Strecker," and bear the locality label *Utah*. Dr. Skinner (The Entomological News, Vol. XXV, p. 324) says: "It is evident that the female from Utah, which he [Strecker] names in his catalog either has been lost or the sex of the specimen was wrongly determined." Strecker occasionally sold specimens which were portions of the suite which he had before him when he described the species. This is well known. It is possible that the female, which Skinner speaks of as having been "lost," may be the female now in the Ehrman Collection, but I question the accuracy of Ehrman's label. His correspondence was destroyed before his death and I have no clue by which to unravel the matter. The specimens do not fully agree with the types in Chicago.

However all this may be, we have made a comparison of photographs of Strecker's types with a long series of *B. euphrosyne* from Europe, and they reveal no significant differences, except that on the underside of both the fore- and the hind wings the dark marginal and submarginal markings appear to be obsolescent or entirely lost. I am inclined therefore to think that *kriemhild* should be placed with *andersoni* as a form of *B. euphrosyne*. The synonymy would then be as follows:

*B. euphrosyne* (Linnaeus)

a. var. *kriemhild* Strecker.

b. var. *andersoni* Dyar.

*B. kriemhild* Strecker has nothing whatever to do with *B. epithore* with which Strecker in his original description compared it, and under which it was originally placed as a variety by Skinner in his Synonymic Catalogue, following Edwards' Revised Catalogue of Diurn. Lep. &c., 1884, p. 273. It does not belong in the same group with *epithore*.

5. *B. tricoloris* (Hübner).

*Argynnis tricoloris* HÜBNER, Exot. Schmett., Bd. II, Tafl. 232 (19), figs. 1-4; *B. tricoloris*, var. *alticola* B. & McD., HOLLAND, Butterfly Book, Pl. XV, fig. 3, ♂.

a. *B. tricoloris* undoubtedly first came into the hands of Hübner through the Moravian missionaries who were settled in Labrador before the middle of the Eighteenth Century, some of whom, as is known to the writer, collected extensively and sent their collections to Germany for study. At a later date Mœschler received a great many insects from Labrador from the Moravian missionaries, as I also did at still later dates. The figure given by Hübner I take to be

the figure of a specimen from Labrador. We have in our collections numerous specimens from the eastern coast of Labrador and from western Labrador, that is the eastern shore of Hudson Bay. All these agree well with Hübner's figure. The form found in Labrador is, as has already been pointed out by Barnes and MacDunnough, the typical form of *B. tricoloris*. The specimens show considerable variation in the intensity of the silvery markings on the under side, but they are all strongly pronounced, even if they do not always show silvery lustre and are sometimes matt.

When I made up the plates for *The Butterfly Book*, I selected a finely preserved specimen contained in the collection of Theodore L. Mead, which is in my possession, and figured it on the plate above cited. This form, of which we have a long series, collected by Mead in Colorado, and others collected in Albany County, Wyoming, and elsewhere upon the eastern slopes of the Rocky Mountains, was in 1913 named *B. tricoloris alticola* by Barnes and MacDunnough (Contrib. Lep. N. Am., II, p. 98). Therefore the figure in "The Butterfly Book" is a figure of the varietal form, to which Barnes and MacDunnough gave the above name. It is, as is pointed out by them, characterized by its lighter ground-color, the reduction of the apical and basal dark shading, and by the narrower and more cleanly cut black markings, while the ground-color on the under side is deep cinnamon-brown. We have recently received at the Carnegie Museum a fine set of eleven specimens of *B. tricoloris alticola* taken at Dawson, Yukon Territory, by Mr. J. A. Kusche.

b. Another varietal form has been named *B. myrina dawsoni* by Barnes and MacDunnough (Canad. Entom. XLVIII, 1916, p. 222). Of this form we possess a specimen from Silver Islet near the eastern end of Lake Superior and others from Longue Lac, which is east of Lake Nipigon. They were collected by Mrs. Otto E. Jennings, who accompanied her husband on his botanical exploration to that part of western Ontario. It is, however, worthy of note that some of the specimens collected at Longue Lac are lighter, and agree more nearly with specimens from Labrador, of which the writer has in his collection fifty-one specimens and of which the Carnegie Museum also possesses a long series taken in Alaska and on the western side of the Labrador peninsula by various exploring expeditions sent out by the Carnegie Museum. *B. myrina dawsoni*, B. & McD., can hardly be

regarded as a local race, but is a melanic form, which turns up in various parts of the area in which *B. tricoloris* occurs.

6. *B. albequina* sp. nov. Near *B. selene* (Denis & Schiffermüller).

♂. *Upperside*: the ground-color of the wings is prevalently a deeper shade of reddish fulvous than is the case in *B. myrina* (Cramer), which at first glance the species superficially resembles. The reddish marginal lunules which are conspicuous in *B. selene* (D. & S.), and in *B. myrina* (Cram.) are only obscurely represented in some specimens, or wholly wanting in others; the marginal border in consequence being broadly black. The forewing at the base of the cell and below the cell from the mesial band of transverse spots inwardly, as well as almost the entire inner half of the hind wing is deeply clouded with dark fuscous, so that the spots and markings toward the base are obscured, much more than is the case in *B. selene* or typical *B. myrina*, with long series of specimens of which comparison has been made. The only specimens of any form of *B. myrina* which I have seen, which show analogous obscuration at the base of the wings, are the specimens from Newfoundland, to which I have given the varietal name *terra-novæ*, but between the upper and under surfaces of *B. myrina terra-novæ* and *B. albequina* there are such obvious differences that at a glance it is seen that they are not identical. *Under side*: the fore wings on the under side very closely agree in the location, form, and size of the dark markings with specimens of *B. selene* from Great Britain and Central Europe, which are before me, but the ground-color toward the apex is paler, passing into pale buff, which is not the case in *B. selene*, nor in *B. myrina*. In the latter species the ground-color often is paler toward the apex of the fore wings on the under side, but the paler area is only a lighter shade of the prevalent bright fulvous, while in *B. albequina* the transition is to a dull grayish buff. The marginal lunules of the fore wing are bright silvery, as in *B. myrina*, while in *B. selene* and its variety *hela* Stgr. they are whitish yellow with little or no silvery lustre. The dark cinnamon-red apical blotch, which is characteristic of typical *B. myrina*, is reduced to a pale gray shade, as is the case in *B. selene* and its variety *hela* from Lapland. In the variety *hela* it almost entirely disappears, as is the case in several of the specimens of *B. albequina* before me. In none of them is it conspicuous as in *B. myrina*. The hind wing agrees closely in its markings with *B. selene*. Between *B. selene* (D. & S.) and *B. myrina* (Cram.) there is a notable difference in that



the submedian band of small silvery spots, which is continuous in *B. myrina* as a curved series from the costa to the inner angle of the wing, in *B. selene* and its variety *hela* is interrupted about the middle of the wing, no silvery spots being found in the interspaces between veins 4 and 5, and in many individuals between veins 3 and 5. The same is true of *B. albequina*. Only in one specimen of the seven males before me can a faint trace of a silvery spot be found at the point indicated. The dark cinnamon blotches which are located in *B. myrina* at the upper and inner angles of the hind wing and which are also sometimes found in *B. selene*, but never in its variety *hela*, are not shown in *B. albequina*, and in this respect the specimens before me agree closely with specimens of *hela* Stgr. sent me by Staudinger many years ago. The underside of the only female of *B. albequina* I have almost exactly repeats in this respect the markings of the female specimen of *hela* Stgr., which is before me.

A noticeable feature of the maculation of the hind wing on the underside of *B. albequina* is the tendency of the silvery spot of the median band which lies just below the cell between veins 1 and 2 to become subdivided, the inner half of the spot being often greatly reduced in size, or even entirely obliterated being replaced by a black dot.

The form of this spot in *B. selene*, its variety *hela*, and in *B. myrina*,

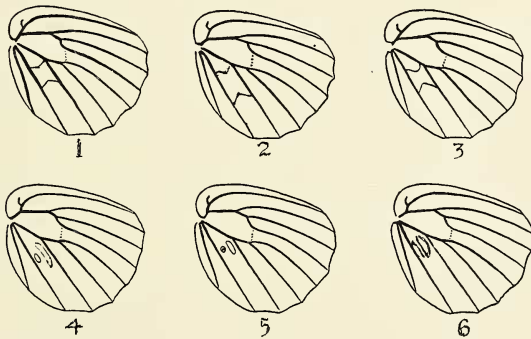


Fig. 1. Neuration of the hind wings of *B. myrina*, *B. selene*, *B. hela*, and *B. albequina*, sp. nov., showing the form of the silvery marking on the underside of the hind wing in these forms, between the submedian and the lower median veins near the base of the wing.

1. *B. myrina*; 2. *B. selene*; 3. *B. hela*; 4. *B. albequina*, ♂; 5. *B. albequina*, ♂; 6. *B. albequina*, ♀.

is shown in fig. 1 and its form in several specimens of *B. albequina* is also given. The form of this spot furnishes a good diacritical mark whereby to distinguish *B. albequina* from allied species.

♀. The only female in my possession suggests that it may be an aberrational form. In case it should prove to be such, I suggest for it the name *albequina*, var *baxteri*, inasmuch as she, with the seven males, were all taken on White Horse Pass by my correspondent, Mr. W. F. O. Baxter.

*Upper side:* the specimen has a lighter ground-color than the males, being tawny, rather than deep reddish. The dark basal and median markings are apparently much enlarged, and run into each other, except that about the middle of the cell there is a lighter area on which the second spot from the base stands forth conspicuously. The area surrounding this light spot is almost solidly dark brown with the normal markings obscurely revealed as deeply black spots. The outer half of the wing is traversed by a regular series of sub-marginal spots and in this sex the outer black border of the wing has pale triangular spots on the interspaces, followed inwardly by blackish sagittate markings. The inner half of the hind wing corresponds in color with the fore-wing, being tawny with the spots black. As in the middle spot of the cell of the fore-wing, the black spot in the middle of the cell of the hind wing is accentuated, by being surrounded by a pale incomplete circle of the ground-color. The outer half of the hind wing corresponds in color to the same area of the fore wing and has a complete series of rather large and sharply defined submarginal spots. The outer margin is marked precisely as is the outer margin of the fore wing. *Under side:* the wings agree with the wings of the males already described, but the ground-color is paler inclining at the apex of the fore wing and throughout the hind wing to purplish gray. The spots of the fore wing are dark and well defined, the two spots located between veins 1 and 2 below the cell being fused and forming an oblong and deep black spot as is also the case in two of the males. The silvery markings on the hind wing consist of four small spots immediately at the base, a quadrate spot near the costa above the cell incised at either end and narrowly defined by black; a moderately large obovate spot over the end of the cell, narrower and pointing outwardly; the spot between veins 1 and 2 below the cell divided, and composed of two narrow silvery streaks outlined by dark brown; the band of silvery spots succeeding the median band is well interrupted



beyond the cell; the submarginal black spots are fairly large and well defined; the silvery marginal spots are triangular in form, surmounted inwardly by deep black sagittate markings. The light area between veins 3 and 5 is pale purplish gray.

Expanse of males, 32—35 mm.; of female, 41 mm.

The foregoing description is based upon eight specimens, seven males and one female, collected at White Horse Pass, Yukon Territory, by Mr. W. F. O. Baxter. Type, ♂, ♀ allotype, and six ♂ paratypes in Holland Collection.

7. *B. polaris* (Boisduval).

With a good series of *B. polaris* Bdv. before me from various European localities, and a long series from Labrador, I can find no essential difference between the insects from Europe and the eastern portions of the North American Continent. But there is a quite marked and apparently consistent difference between the specimens from Alaska and those from Europe and Labrador. The former are much lighter on the upper surface with the spots and dark basal suffusion of both wings much reduced giving the upper surface a much brighter appearance than is the case in the latter. On the underside there is also a tendency to a lighter coloration and to an enlargement of the silvery spots. This is especially true of specimens from the Yukon region, in which the ground-color of the basal area is not deep maroon as in specimens from Europe and Labrador, but lighter red. This appearance seems to be constant. This form I take to be that which Strand has described as *B. polaris* var. *americana*.

8. *B. improba* (Butler).

This species has been by some writers treated as a varietal form of *B. frigga*. Bryck (Ent. Tidskrift, XLI, 1920, pp. 129-132) has discussed the matter in the light of a male specimen received by him from O. Bang-Haas labelled *Argynnis improba*. Bryck figures the upper and under side of this specimen. Unfortunately it is *not* a specimen of *B. improba* Butler, but a male specimen of *B. frigga* like dozens of others I have from various parts of the northern regions of America. Dr. Bryck's figures 2 and 5, p. 130 delineating a specimen from Torneträsk, Sweden, represents more nearly what we know as *B. improba* Butler, and the insect is different from what he gives in his figs. 1 and 4 as *improba* Butler from North America. The two are not identical.

Gibson (Canadian Arctic Expedition, III, 1922, Part I, Lepidoptera, Pl. V, figs 7 and 8) has given us recognizable figures of the upper side of the male and female of *B. improba*. On the underside the markings are recognizably different from those of *B. frigga*. As species run in this genus, *Brenthis improba* Butler is worthy of being specifically separated from other forms. It ranges nearer the Arctic Circle, than any other nymphalid butterfly, and has been received from Nova Zemlya.

9. *B. youngi* Holland.

This has been sunk as a synonym of *B. improba* by Barnes and Benjamin in their lately published "List of the Diurnal Lepidoptera of Boreal America." As I think that neither of my valued friends has seen the type, which unfortunately remains unique in my collection, I am somewhat puzzled at their conclusion. On the upper side the ground-color is bright fulvous on the outer half of both fore and hind wings and not obscurely dark brownish as in *B. improba* Butl. The dark submarginal and marginal markings stand out in sharp contrast with the light ground-color. On the underside the wings are very pale, the markings very faint, except on the hind wing, where a deep brown narrow curved band of maroon runs from the costa to the middle of the inner margin. It certainly does not agree with any specimen of *B. improba* I have seen.

10. *B. frigga* var. *lehmanni*, nom. nov.

*B. frigga alaskensis* Lehmann, Gross-Schmett. d. Erde, V, 1913, pl. 86a.

The female type of this species is named and figured by Lehmann in Seitz, Gross-Schmett. d. Erde, V, 1913, p. 424, pl. 86a. Unfortunately *alaskensis* as a subvarietal name is pre-occupied in the genus (Cf. *A. pales* var. *alaskensis* Holl., 1900), and I therefore propose the new name *lehmanni*. I possess fine series of both males and females of this well marked form from the Kuskokwin River and various other parts of Alaska. I propose to figure both sexes in the near future.

11. *B. bellona* (Fabricius).

This well known insect varies greatly in its appearance over its range. From the interior of Labrador we have received a good series of specimens showing the melanic tendency which is so marked in the butterflies of the subarctic and arctic regions in eastern America. I propose to name them in honor of Mr. W. E. Clyde Todd, who brought them with him, when he and his associates made the first crossing of

Labrador achieved by white men, from Three Rivers, Quebec, to Ungava on Davis Strait. The description follows:

a. *B. bellona* subsp. *toddi*, subsp. nov.

*Upperside*: all of the specimens, male and female, are characterized by the fact that both the fore and hind wings, with the exception of the outer submarginal band, are heavily suffused with dark brown, so that the maculation apparent in typical *B. bellona* is almost lost to the eye; furthermore the marginal spots and those of the next inner row are confluent and thus present the appearance of a heavy dark brown outer border. The fore wings are more suffused with dark color than the hind wings and in one specimen the fore wing is almost solidly dark brown or blackish. *Underside*: on this side the wings are deeper in color than in the southern races of *A. bellona*, though the maculations are well preserved in outline and do not show the tendency to fuse and coalesce, which is shown on the upper side. Type ♂, St. Margaret's River, July 5, 1917, C. M. Acc. No. 5968, Todd coll.; allo-type ♀, East Main, July 8, 1914, C. M. Acc. No. 5269, Todd coll.; four male paratypes from St. Margaret's and Moisie Rivers, Quebec.

Melanism often sporadically reveals itself in this species, and we have numerous examples of both sexes in which this phenomenon presents itself. A large series from the region of Lake Nipigon, Ontario, reveals this tendency, but without any coalescence of the marginal markings. The outer edge in these specimens is always bright fulvous except for the marginal and submarginal dots. In eastern Quebec, the interior of Labrador and on the eastern side of Hudson Bay, this dark form seems to constitute a well marked and constant race. I hope shortly to publish colored figures of the types, which are above described.

b. *B. bellona*, ab. *pardopsis* ab. nov.

A rather remarkable aberrant form of *B. bellona* taken at Crafton, Allegheny County, Pa., is before me. It was captured on Aug. 27, 1921. It is a female. *Upperside*: pale tawny, shading into darker fulvous toward the base of both wings. The usual markings appear, but all are greatly reduced in size and more or less disconnected and not confluent, thus imparting to the wings a spotted appearance. It has been suggested on this account that the insect should bear the varietal name *pardopsis*, which appears appropriate. The color and the spots suggest the pelt of a leopard. On the underside the markings are those of a normal specimen of *B. bellona* in this latitude.